

1 **WHAT IS CLAIMED IS:**

- 2 1. A pedometer for detecting vibrations in a direction of motion,
- 3 comprising:
 - 4 a main body (10);
 - 5 a printed circuit board (20) incorporating a counting circuit (30) and
 - 6 being installed inside the main body (10);
 - 7 a counting circuit (30) being formed by a signal amplifier (31), a signal
 - 8 detection circuit (32), and a processor (33);
 - 9 a vibration detector (11) being installed on the printed circuit board (20)
 - 10 and connected to the counting circuit (30), wherein a sensing pad (110) of the
 - 11 vibration detector (11) is disposed orthogonal to the direction of motion to
 - 12 sense any body vibration in the direction of motion;
 - 13 a display unit (12) being installed on the printed circuit board (20) and
 - 14 connected to the counting circuit (30) for displaying a pace count value;
 - 15 where the above vibration detector (11) is disposed orthogonal to the
 - 16 direction of motion and operates in conjunction with the counting circuit (30)
 - 17 on the printed circuit board (20) to detect any body vibration in the direction of
 - 18 motion.
- 19 2. The pedometer as claimed in claim 1, wherein the vibration detector
- 20 (11) comprises a ceramic piezoelectric element.
- 21 3. The pedometer as claimed in claim 1, wherein the counting circuit
- 22 (30) includes:
 - 23 a signal amplifier circuit (31) being connected to an output of the
 - 24 vibration detector (11) to obtain an output signal from the vibration detector (11)

1 after proper signal filtering and amplification;
2 a signal detection circuit (32) being connected to an output of the
3 signal amplifier circuit (31) to compare the vibration detection signals and then
4 output a pulse signal; and
5 a processor (33) being connected to an output of a comparator having
6 variable reference voltage (323) in the signal detection circuit (32).

7 4. The pedometer as claimed in claim 3, wherein the signal detection
8 circuit (32) is formed by a low-pass filter (321), a voltage divider (322) and a
9 signal comparator (323), wherein the voltage divider (322) and the low-pass
10 filter (321) are both connected to a positive input of the comparator having
11 variable reference voltage (323) (reference voltage terminal).

12 5. The pedometer as claimed in claim 4, wherein the reference voltage
13 terminal of the comparator (323) is connected to an output of the processor (33),
14 wherein the processor (33) uses a pulse signal input to control the comparator
15 (323), whereby the processor (33) outputs a signal with a pre-determined
16 duration to reduce noises.

17 6. The pedometer as claimed in claim 3, wherein the voltage divider
18 (322) is formed by two series connected resistors and a grounded capacitor.

19 7. The pedometer as claimed in claim 3, wherein the signal amplifier
20 circuit (31) is formed by a filter (311) and a signal amplifier (312), such that the
21 input of the filter (311) is connected to the vibration detector (11) and the
22 output is connected to the signal amplifier (312).

23 8. The pedometer as claimed in claim 4, wherein the signal amplifier
24 circuit (31) is formed by a filter (311) and a signal amplifier (312), such that the

1 input of filter (311) is connected to vibration detector (11) and the output is
2 connected to the signal amplifier (312).

3 9. The pedometer as claimed in claim 5, wherein the signal amplifier
4 circuit (31) is formed by a filter (311) and a signal amplifier (312), such that the
5 input of filter (311) is connected to vibration detector (11) and the output is
6 connected to the signal amplifier (312).

7 10. The pedometer as claimed in claim 6, wherein the signal amplifier
8 circuit (31) is formed by a filter (311) and a signal amplifier (312), such that the
9 input of filter (311) is connected to the vibration detector (11) and the output is
10 connected to the signal amplifier (312).